

# UK Patent Application GB 2 260 751 A

(43) Date of A publication 28.04.1993

(21) Application No 9221050.9

(22) Date of filing 07.10.1992

(30) Priority data

(31) 9121337

(32) 09.10.1991

(33) GB

(71) Applicants

Philip J Downs  
422 Parrwood Road, East Didsbury, Manchester,  
M20 0GP, United Kingdom

Peter Van Houten  
422 Parrwood Road, East Didsbury, Manchester,  
M20 0GP, United Kingdom

(72) Inventors

Philip J Downs  
Peter Van Houten

(74) Agent and/or Address for Service

McKnight & Lawrence  
Regent House, Heaton Lane, Stockport, Cheshire,  
SK4 1BS, United Kingdom

(51) INT CL<sup>6</sup>  
A61G 7/14, B66C 23/42

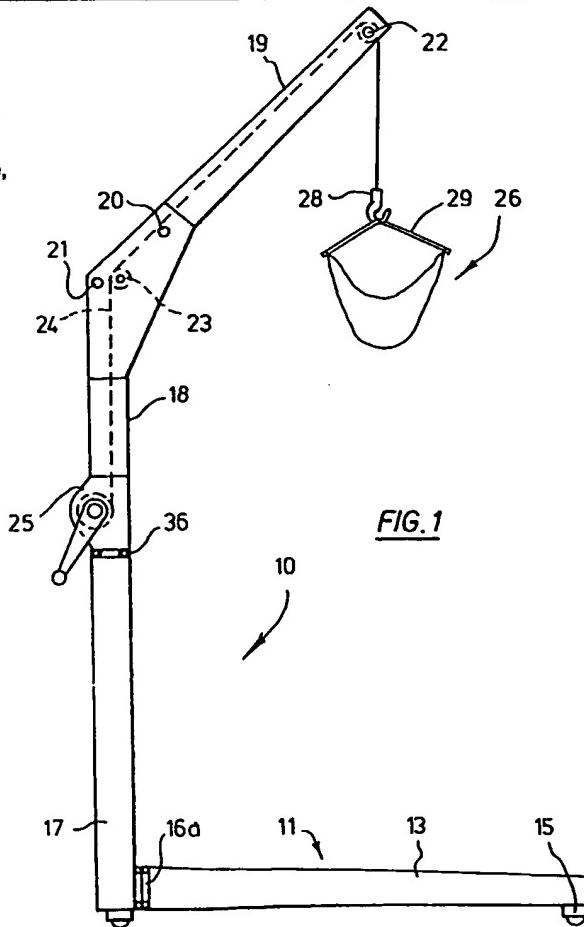
(52) UK CL (Edition L)  
B8H HCB H304 H410

(56) Documents cited  
GB 2255960 A GB 0813617 A EP 0506245 A

(58) Field of search  
UK CL (Edition L) B8H HCB  
INT CL<sup>6</sup> A61G 7/10 7/12 7/14  
Online databases: WPI

## (54) Invalid hoist

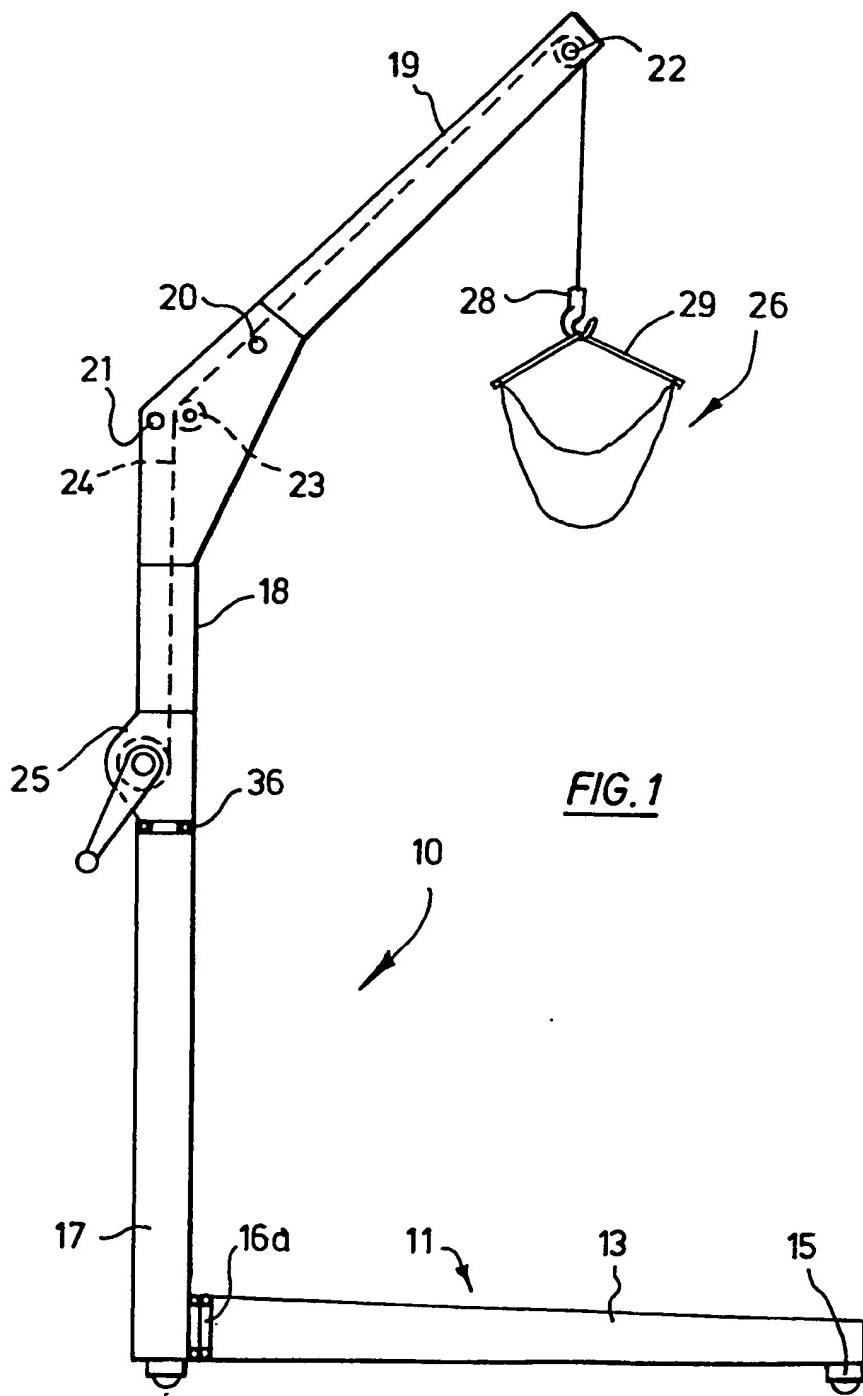
(57) A hoist for lifting and lowering a paraplegic or other seriously infirm or disabled person is disclosed comprising a wheeled base (11), a lower frame (13), an upstanding column (17) extending in the general direction of the frame, a cantilever beam (19) extending from the column, a sling arrangement (26) beneath the beam suspended by cord means passing over a pulley arrangement to a winch means (25), characterised by the provision of hinged means (21) connecting at least two of the elements together enabling the hoist to be collapsed into a compact formation for stowing.



GB 2 260 751 A

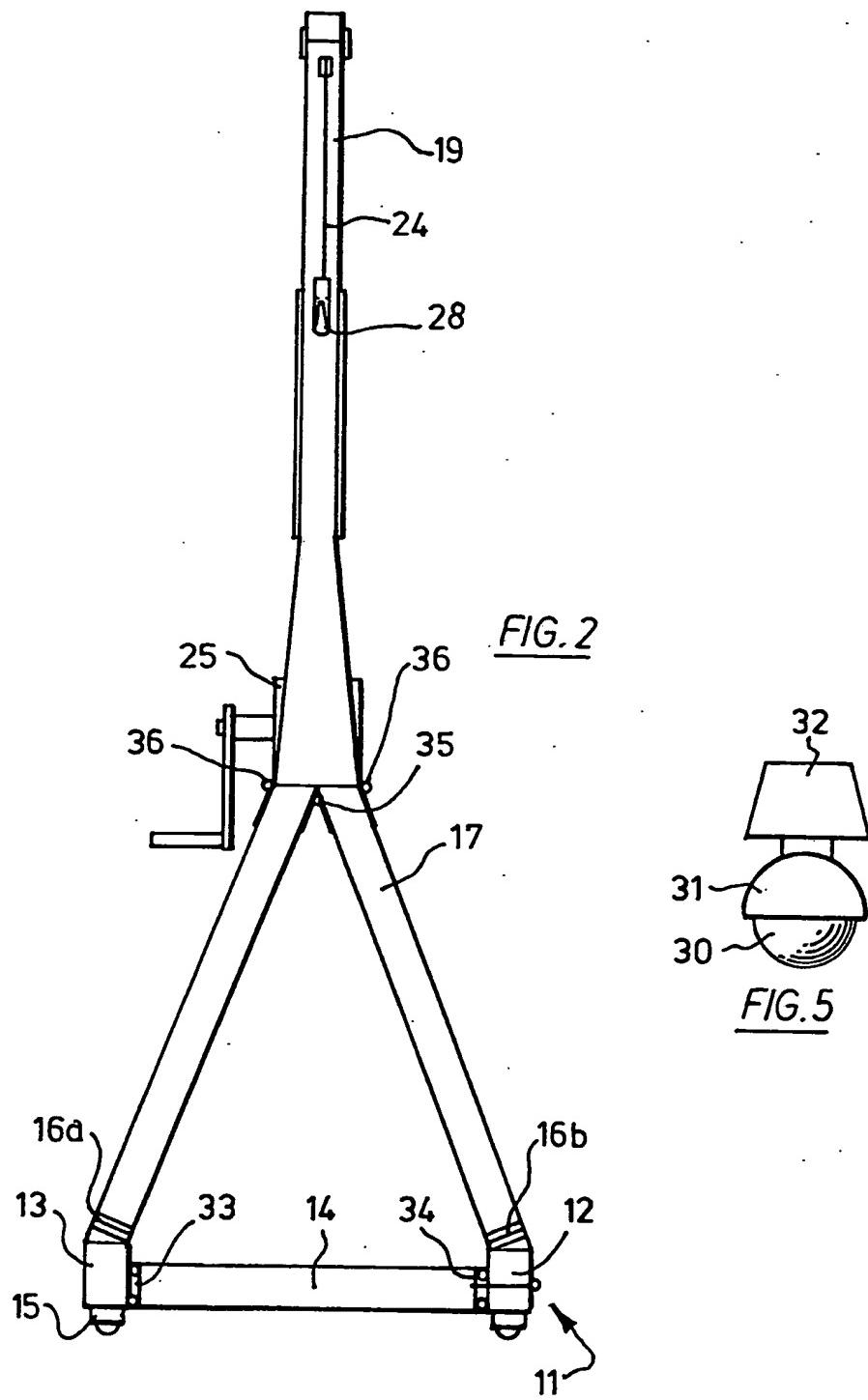
19 10 92

1/3

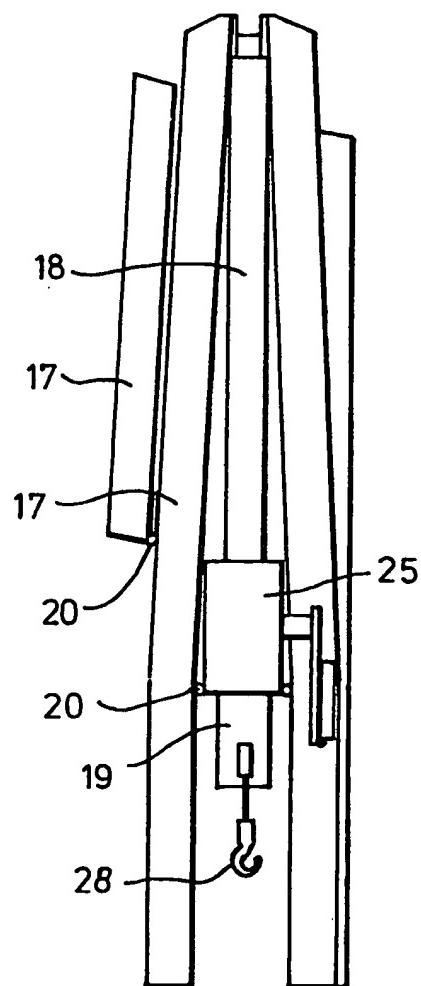
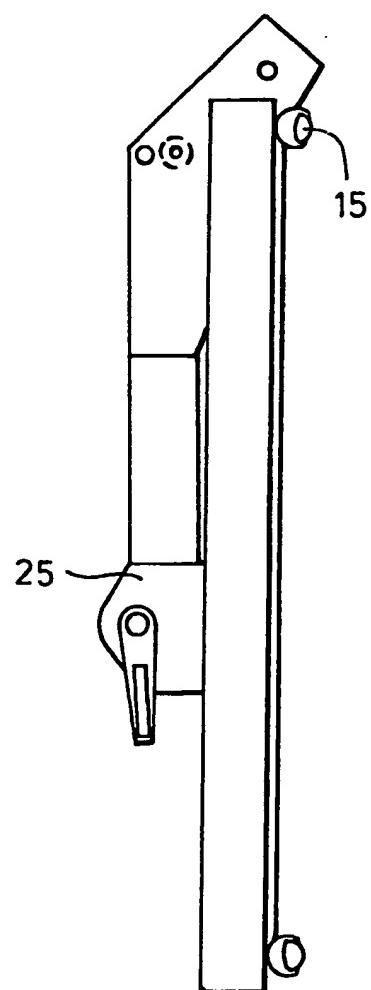


19 10 92

2/3



3/3

FIG.3FIG.4

HOIST

This invention relates to hoists of the kind used for lifting and lowering a paraplegic or other seriously infirm or disabled person.

A common form of conventional hoist for such purpose comprise a wheeled floor engaging base or chassis having an upstanding mast thereon whose upper end carries a gantry arm which is pivotally connected to the mast. A hydraulic or like cylinder arrangement is pivotally connected between the mast and gantry arm and operable by pump means to raise or lower the gantry arm which carries a sling arrangement for supporting the patient to be lifted and lowered. Other forms include scissor-like or screw jacks for example.

Although such hoists will be readily available to a patient in hospital or his permanent home, they are not easily transportable to accompany the patient on a temporary visit such as to a holiday hotel for example, on account of their considerable weight and difficulties in dismantling especially when hydraulic connections or the like are involved.

It is an object of the present invention to provide a hoist which overcomes, at least to some extent, the problems aforesaid.

According to the present invention there is provided a hoist for lifting and lowering a paraplegic or other seriously infirm or disabled person comprising a wheeled base, a lower frame, an upstanding column extending in the general direction of the frame, a cantilever beam extending from the column, a sling arrangement beneath the beam suspended by cord means passing over a pulley arrangement to a winch means, characterised by the provision of hinged means connecting at least two of the elements together enabling the hoist to be collapsed into a compact formation for stowing.

The beam may extend from the column at one of a number of possible fixed angles.

The winch means may be hand-operable, foot-operable or motor-driven.

The wheels to the base may comprise spherical bearings captive in downwardly directed cup members.

The elements hingedly connected each other may comprise the base and lower frame, the lower frame and column, the column and the beam or any combination thereof.

The base, lower frame, column and beam may be of composite materials providing adequate strength whilst being of light weight.

The invention will be further apparent from the following description, with reference to the figures of the accompanying drawings which show, by way of example only, one form of hoist embodying same.

Of the drawings :-

Figure 1 shows a side view of the hoist;

Figure 2 shows a front view of the hoist of Figure 1;

Figure 3 shows a front view of the hoist of Figure 1 in a folded position;

Figure 4 shows a side view of the hoist of Figure 1 in a folded position;

and Figure 5 shows one of the wheel arrangements to the hoist on an enlarged scale.

Referring now to the Figures, it will be seen that the hoist 10 comprises a base frame 11 generally of U-shape having side arms 12,13 projecting from a connecting beam 14. The frame 11 is mounted on ground engaging wheel arrangements 15 to be described in greater detail hereinafter.

An A-frame 17 extends upwardly from the base frame 11 and is connected to a column 18 extending in the general direction of the A-frame. A cantilever beam 19 is connected to the column 18 and extends over the centre of the base frame 11.

Pulleys 22 and 23 are provided at the opposite ends of the cantilever beam 19 and guide a cord 24 between hand operable winch means 25 located on the side of the column 18 and a sling arrangement 26 suspended on the cord 24 beneath the cantilever beam 19 over the confines of the base frame 11 such that the hoist is stable when the sling arrangement supports a patient to be raised and lowered using the winch means 25. The cord may be of steel wire or polymer rope and is attached to a safety swivel hook 28 and is located within the beam and column which will ordinarily be of box-section. The sling arrangement 26 comprises a spreader bar 29 for attachment to the hook 28.

The base frame 11, A-frame 17, column 18 and beam 19 are made from either reinforced composite material or aluminium alloy, or a combination of both in laminate or closed or open section so as to be of light weight whilst having adequate strength.

The base frame 11, A-frame 17, column 18 and beam 19 and connecting beam 14 are hingedly connected and removably connected, as described below, enabling the hoist to be collapsed into a compact formation for stowing either for transporting or storing when not in use, as shown in Figures 3 and 4.

Alternatively, the hoist may be easily dismantled for transport in a case or bag and reassembled when required.

The hoist is collapsed as universal joints 16a,16b located between the A-frame 17 and each distal end of arms 12 and 13 of frame 11 allow the arms to fold parallel to the A-frame. The connecting beam 14 is connected to one side of the A-frame by a hinge 33 and to the other side by a hinge with a removable pin 34, allowing the connecting beam to fold up parallel with the A-frame and the A-frame to collapse by movement of hinges 35,36.

The column 18 is connected to beam 19 both with a hinge 20 and a hinge with a removable pin 21 allowing removal of the beam therefrom.

The universal joints 16a,16b, in addition to their role in stowing the hoist, also allow sideways movement of the arms 12,13. This is useful in allowing the hoist to be wheeled through a narrow opening before extending the arms outwardly.

The wheels 15 each take the form of a spherical bearing 30, see Figure 5, coated with PTFE or other low friction material and captive in a downwardly directed cup member 31. Because of the spherical bearings there is no resistance to movement of the hoist in any direction from a stationary position. The cup members 31 depend from a shock absorbing structure such as a simple resilient pad 32.

It will be appreciated that it is not intended to limit the invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible, without departing from the scope thereof.

Thus the winch may be located on the base frame and be foot operable, or it may be motor driven from a battery power source.

The base frame may be equipped with a brake arrangement.

The winch may be located at the column end of the beam, in which case a single guide pulley only is required.

CLAIMS

1. A hoist for lifting and lowering a paraplegic or other seriously infirm or disabled person comprising a wheeled base, a lower frame, an upstanding column extending in the general direction of the frame, a cantilever beam extending from the column, a sling arrangement beneath the beam suspended by cord means passing over a pulley arrangement to a winch means, characterised by the provision of hinged means connecting at least two of the elements together enabling the hoist to be collapsed into a compact formation for stowing.
2. A hoist according to claim 1, wherein the beam extends from the column at one of a number of possible fixed angles.
3. A hoist according to claim 1 or claim 2, wherein the winch means is hand-operable, foot-operable or motor-driven.
4. A hoist according to any one of claims 1 to 3, wherein the wheels to the base comprise spherical bearings captive in downwardly directed cup members.

5. A hoist according to any one of claims 1 to 4, wherein the elements hingedly connected each other may comprise the base and lower frame, the lower frame and column, the column and the beam or any combination thereof.

6. A hoist according to any one of claims 1 to 5, wherein the base, lower frame, column and beam are of composite materials providing adequate strength whilst being of light weight.

Patents Act 1977

Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

GB 9221050.9

Relevant Technical fields

(i) UK CI (Edition 1 ) BSH, HCB

Search Examiner

D MCMUNN

(ii) Int Cl (Edition 5 ) A61G 7/10, 7/12, 7/14

Date of Search

18 JANUARY 1993

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Documents considered relevant following a search in respect of claims

1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X, &	GB 2255960 (NESBIT EVANS)	1, 3, 5
X	GB 813617 (PRIESTMAN)	1, 3, 5
X, &	EP 0506245 (NESBIT EVANS)	1, 3, 5

Category	Identity of document and relevant passages	Relevant to claim(s)
		5

#### Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).